ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION

TECHNICAL ANALYSIS REPORT

For Air Quality Control Permit No. 098CP01
X-198

Alyeska Pipeline Service Company
Pump Station 5

Hazardous Air Pollutants

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1.0 Introduction

1.1 Project Description

Alyeska Pipeline Service Company (Alyeska) owns and operates the Trans Alaska Pipeline System (TAPS). TAPS includes several pump stations used to move crude oil from the Alaska North Slope to the Valdez Marine Terminal. TAPS Pump Station 5 (PS 5) was designed as a crude oil pumping facility. However, Alyeska has not installed any mainline pump drivers at PS 5. PS 5 is located approximately 220 air kilometers north of Fairbanks, Alaska (Latitude: 66º 48' 47" N; Longitude: 150° 39' 43" W). To document that the facility is not classified as a Hazardous Air Pollutant (HAP) major under 18 AAC 50.300(f) Alyeska is seeking Owner Requested Limits (ORLs) that cap stationary source HAP emissions below the regulatory limits of 10 tons per year for an individual HAP and 25 tons per year for two or more HAPs.[1] These ORLs are voluntary in nature and are not needed to avoid any requirement to obtain a permit under 18 AAC 50 or AS 46.14 because no physical or operational change is associated with this project.

Under 18 AAC 50.225(a) and 18 AAC 50.305(a)(4) an owner or operator may avoid a requirement to have a permit under AS 46.14 or 18 AAC 50, if the Department approves limits on a source's ability to emit air contaminants. These owner requested limits allows the stationary source to avoid classification as a Hazardous Air Pollutant (HAP) Major Facility under 18 AAC 50.300(f). A HAP major stationary source is one that emits or has the potential to emit 10 TPY or more of any single hazardous air contaminant or 25 TPY or more in the aggregate of two or more HAP's.

The emission unit with the greatest potential of HAP emissions is the crude oil break-out tank (Tank 150) due to the vaporization of volatile HAPs present in the crude emitted from the tank along with the crude vapors. The tank's vapor emission rate is a function of the crude oil volatility, temperature, and crude flow rate into the tank. The vapor composition (and HAP composition) changes over time as a function of the crude composition. Also contributing to the total stationary source potential HAP emissions are those from turbines, heaters, engines, incinerators, piping fugitives, and fuel storage tanks. Alyeska calculated HAP emissions from these other emission units based on their unrestricted, full-time full-load operation, subject to existing operational limits where applicable. Although the HAP ORL restrict emissions from only to the breakout tank, the limitations on this emission unit will ensure that the entire stationary source's HAP emissions are less than 10 TPY individual and 25 TPY aggregate.

Alyeska proposes to cap potential HAP emissions from the crude oil breakout tank by establishing HAP emission limits at the source. In the application, Alyeska proposes a conservative methodology to calculate actual HAP emissions from the breakout tank. This methodology is presented in Appendix A of the permit. A general overview of the emissions

[1] Alaska's air quality permit program and associated regulations underwent a major revision that became effective October 1, 2004. Applicants who submitted a complete permit application prior to this date have the option of having their applications processed under either the "new" or "old" program. Per Alyeska's request, the Department is processing the PS 5 application and modeling analysis under the old program/regulations.

calculation methodology is presented in Appendix A of this report. The emission calculations that were used to check HAPs values from the combustion equipment at the stationary source are presented in Appendix B of this report for reference.

1.2 Stationary Source Description

PS 5 is a crude petroleum pipeline transportation facility (SIC code 4612). Diesel-fired equipment includes combustion turbines, heaters, and reciprocating engines used in the movement of oil. There is one breakout tank for the storage of oil in the event of a pipeline slowdown or shutdown. During 2004 and 2005 Alyeska is in the process of strategic reconfiguration of the TAPS pump stations. At PS 5 Alyeska is proposing to remove three Garrett IE831 turbine generators and one Solar Saturn turbine generator. They will replace these units with four Caterpillar Model 3456 DITA reciprocating internal combustion engine (RICE) and one 65kWe RICE. The stationary source includes auxiliary equipment (e.g. backup generators, heaters and incinerators); this equipment is not considered for this project because the potential emitted HAP is small, and thus insignificant. The revised equipment list was taken into account when developing HAP ORLs in this permit.

1.3 Air Quality Classification

The area surrounding PS 5 is classified as attainment or unclassifiable for all pollutants. The nearest nonattainment area to the stationary source is the Eagle River PM-10 nonattainment area located approximately 600 kilometers south of PS 5. Alaska Air Quality Regulations designate the area adjacent to PS 5 as Class II. The nearest Class I area is Denali National Park, approximately 300 Kilometers south of the pump station.

1.4 Relevant Permit History

PS 5 is a Prevention of Significant Deterioration (PSD) Major Stationary Source, as defined in 18 AAC 50.300(c)(1), because it has the potential to emit more than 250 tpy of a regulated air contaminant in an area classified as attainment or unclassifiable. EPA reviewed Alyeska's proposal to install two mainline combustion turbines under PSD and issued PSD X-80-19 June 6, 1980. As mentioned above, Alyeska did not install the two turbines. The last Alaska air quality control permit-to-operate for this stationary source expired June 29, 1990, as extended. On September 12, 1990, the Department found that Pump Station 5 was no longer classified as a stationary source requiring an air quality control permit to operate.

State rule changes effective January 18, 1997 revised air permit applicability thresholds and bifurcated the permit program into the construction permit program and the operating permit program. The Department has issued a construction permit for this stationary source September 13, 2004. The stationary source-wide and unit-specific requirements for PS5 are included in Operating Permit, 098TVP01, initially issued January 28, 2003.

2.0 Department Findings

Alyeska submitted an original construction permit application on October 15, 2003, and supplemental information on January 16, 2004, July 23, 2004, and October 21, 2004. The Department deemed the construction permit application complete on July 28, 2004.

From review of the permit application and supplemental information, the Department finds that:

1. PS 5 is currently permitted under the Department's Air Quality Control Permit to Operate No. 098TVP01 and Construction Permit No. 098CP02;
2. The Pump Station 5 is a crude petroleum pipeline transportation stationary source classified under 18 AAC 50.300(b)(2) and (c)(1). The stationary source is a Prevention of Significant Deterioration Major, but the Department has not reviewed any project at the source under the State-Implementation plan-approved PSD program;
3. The project will not result in new emission units added to the stationary source inventory;
4. The HAP ORLs will document that PS 5 is not classified as a HAP Major stationary source under 18 AAC 50.300(f);
5. The stationary source is not located within the coastal zone. Therefore, no project consistency under the Alaska Coastal Management Program (ACMP) is required;
6. The application satisfies the applicable requirements set out in 18 AAC 50.310 and 18 AAC 315 (e).

Thus the Department is proposing to grant Alyeska's request and issue Air Quality Control Construction Permit No. 098CP01 for the TAPS PS 5.

3.0 Owner-Requested Limits

Alyeska is requesting ORLs under 18 AAC 50.305(a)(4) specifically to restrict the potential emissions from the breakout tank. The level of HAP emissions authorized by the break out tanks ORL's will ensure that the total facility-wide potential HAP emissions are less than 90% of both the 10 ton per year (TPY) major facility threshold for an individual HAP and the 25 TPY major threshold for HAPs in aggregate. For ORL compliance, Alyeska will document that the actual HAP emissions from the breakout tank are less than the allowable emission levels under the ORL. Alyeska is proposing no new ORL for sources other than the breakout tank.

While Alyeska's actual emissions do not approach or exceed these limits, Alyeska has specifically requested the following limitations pursuant to 18 AAC 50.305(a)(4):

1. Limit HAP emissions from the Crude Oil Breakout Tank (Tank-150) to no greater than 8.1 tons per year for any individual HAP, and

2. Limit HAP emissions from the Crude Oil Breakout Tank (Tank-150) to no greater than 18.5 tons per year for all HAPs in aggregate.

Table 1 presents a summary of actual HAP emissions. These actual emissions are based on PS 5 operations using the crude oil composition in 2001 and 2002. Alyeska provided detailed calculations in the application (see Appendices B, C, and D of that document)

Table 1. Summary of Actual HAP Emissions, Pump Station 5

Emission Unit Category	Actual Emissions (tons per year)	
	Highest Emitted Individual HAP	Total of All HAP's
Breakout Tank	N-Hexane 0.54	0.77
Diesel-Fired Turbines	Manganese 0.03	0.05
Diesel-Fired Heaters	N-Hexane 0.03	0.03
Diesel Engines	Formaldehyde 0.000004	0.00001
Waste Incinerator	Hydrochloric Acid 0.09	0.09
Fugitives	N-Hexane 0.03	0.9
STATIONARY SOURCE TOTAL	N-Hexane 0.6	1.0

Alyeska estimated a hypothetical, worst-case mass flow rate of crude oil of approximately 2,350,000 barrels per year. Using this flow rate Alyeska calculated the potential HAP emissions for the breakout tank. The potential emissions are less than the proposed ORL of 90% of the regulated limits of 10 TPY per individual HAP or 25 TPY per aggregate HAP's. Table 2 presents the potential HAP emissions based on the proposed breakout tank ORL, the unrestricted operation of some emission units, and the existing operational limits where applicable for all other emission units.

Table 2 also shows that the potential HAPS emissions from all emission units other than the breakout tank contribute less than 10% of the total stationary source HAPs. It is because of the small amount of potential emissions from this equipment that the Department is requiring active monitoring of only the breakout tank and the HAPs emitted from that emission unit and not from any other emission units.

In 2004 Alyeska proceeded with a strategic reconfiguration of the Trans-Alaska Pipeline System. At Pump Station 5 the reconfiguration consists of removing the diesel-fired turbines and replacing them with diesel-fired engines. Both the pre- and post- reconfiguration potential emissions are listed in Table 2. As shown, the reconfiguration does not affect the results the analysis.

Table 2. Summary of Potential HAP Emissions under Proposed ORL's, Pump Station 5

Emission Unit Category	Potential Emissions (tons per year)	
	Highest Emitted Individual HAP	Total of All HAP's
Breakout tank (with ORL)	N-Hexane 8.1	18.5
Diesel-Fired Turbines (pre-reconfiguration)	Manganese 0.2	0.3
Diesel-Fired Turbines (post-reconfiguration)	Manganese 0.06	0.1
Diesel-Fired Heaters	N-Hexane 0.4	0.5
Diesel Engines (pre-reconfiguration)	Formaldehyde .006	0.02
Diesel Engines (post-reconfiguration)	Formaldehyde .05	0.2
Waste Incinerator	Hydrochloric Acid 1.4	1.4
Fugitives	N-Hexane 0.5	1.8
STATIONARY SOURCE TOTAL (pre-reconfiguration)	N-Hexane 9.0	22.5
STATIONARY SOURCE TOTAL (post-reconfiguration)	N-Hexane 9.0	22.5

Note: Pre-reconfiguration is pre September 2004. Post-reconfiguration is post September 2004.

HAP emissions under the worst-case flow rates will vary slightly over time due to the change in composition of the crude oil stream as the percentage of the total flow attributable to field crude oil property changes, new fields coming on-line, and changes in the ratio of oil from specific producing fields. Some oil fields produce crude oil with higher percentage of VOC and HAP ratios than other fields. North Slope production changes and transportation techniques, such as natural gas liquid injection cause the crude oil properties to constantly fluctuate. Because of this, the Department is requiring that Alyeska sample of the crude stream once every three months for the first two years, then annually thereafter, rather than once a year as requested by the Permittee

(Condition 2.1). In addition, if the calculated HAP emissions exceed 90% of either of the ORLs the Department also requires that Alyeska determine the concentration of HAPs in the crude vapor by the Gas Producers Association Method 2286, and then re-calculate the HAP emissions from Tank 150 using this data. The Department's intent is to confirm that the Alyeska calculation methodology provides an adequate representation of the HAPs actually emitted from the tank.

4.0 Applicable Standards

For each stationary source or modification subject to construction permitting, the applicant must show that the proposed emission units comply with state and federal emission standards. The Department has adopted federal New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPs), by reference in 18 AAC 50.040. In addition, the Department has source-specific emission standards listed in 18 AAC 50.050 through 50.090.

Operating permit 098TVP01 and its Statement of Basis describes the standards applicable to existing equipment. This report presents only the Department's consideration of standards pertinent only to this project, which did not include any proposed physical or operational changes.

4.1 New Source Performance Standards (NSPS)

The EPA promulgates and implements New Source Performance Standards (NSPS). The intent of NSPS is to provide technology-based emission control standards. EPA may delegate to each state the authority to implement and enforce standards of performance for new stationary sources located in that state. The Department has incorporated by reference the NSPS effective July 1, 2001, for specific industrial activities, as listed in 18 AAC 50.040. However, EPA has not delegated to the Department the authority to administer the NSPS program at this time.

4.2 Maximum Achievable Control Technology (MACT) for HAP Major Stationary Sources

U.S. EPA promulgates MACT standards for HAP major stationary sources under the Federal Clean Air Act. The Department incorporates these standards by reference in 18 AAC 50.040(c).

Subpart HH: National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities. After reviewing the exception to the subpart, PS 5 is categorically exempt. Section 63.760(e)(1) states that, "a facility that exclusively processes, stores or transfers black oil is not subject to the requirements of this subpart (HH). For the purposes of this subpart, a black oil facility that uses natural gas for fuel or generates gas from black oil shall qualify for this exemption." In addition, PS 5 is a crude oil transportation facility (pipeline)(SIC Code 4612). The pump station is not an oil or gas production facility.

EPA recently adopted three new MACT standards—Organic Liquid Distribution, reciprocating internal combustion engines, and combustion turbine standards. If PS5 were a HAP major stationary source, then those emitting activities on-site could become subject to the standards.

This proposed permit action will ensure that Alyeska's PS 5 activities will not be subject to the new standards because the ORLs document that PS 5 is not a major source of HAPs. The Department has not yet proposed rule-making to incorporate these three new standards by reference.

5.0 Ambient Air Quality Impact Analysis

Alyeska's proposal does not trigger any of the Department's mandatory modeling requirements.

6.0 Permit Administration

This permit action proposes to authorize Alyeska PS 5 to operate as a HAP synthetic minor. The following is a summary of the rationale for the permit conditions and the Departments preliminary decision.

6.1 Permit Conditions

The Department's Operating Permit Group has oversight for all reports, surveillance, records, and inspections of permitted facilities. Therefore, all plans, reports except excess emission reports, and notices required under this permit should be submitted to the Group's Fairbanks Office. This is provided for in Section 9 "General Recordkeeping, Reporting, and Compliance Certification Requirements," of the Operating Permit 098TVP01. The Department has not reiterated this requirement in the preliminary construction permit. Alyeska should submit excess emission reports to the Department's Anchorage Office as indicated on the form in the Operating Permit Section 14, ADEC Notification Form.

6.2 Project Consistency with ACMP

The PS 5 is not located in the coastal zone and is not subject to ACMP.

6.3 Preliminary Decision

Alyeska's application for a construction permit satisfies the requirements in 18 AAC 50.310. Their application demonstrates that the facility will meet the applicable requirements set out in 18 AAC 50.315(e). Therefore, in accordance with 18 AAC 50.315(b), the Department has made a preliminary decision to issue a construction permit for the project. In accordance with 18 AAC 50.315(c), the Department published a public notice in the Fairbanks Daily News Miner in two issues starting November 2 and 3, 2004. The notice solicits public comments regarding the preliminary permit decision. Copies of the preliminary decision are available for review at the Department's Juneau, Anchorage, and Fairbanks Air Permits Offices during the public comment period. The Department will make a final decision whether to issue the construction permit after consideration of comments received during the public comment period.

APPENDIX A

Emissions Calculation Methodology

The type and quantity of HAP's emitted from the breakout tank is directly related to the composition of these constituents in the crude oil and crude vapor. The following general discussion describes the calculation methodology used by Alyeska, with some additions or slight changes in the presentation. Except where noted, the methodologies apply to both actual and potential HAP emissions calculations.

1. Crude Vapor Speciation. The ORL's are developed based on a sampling of North Slope crude in the PS 1 discharge stream. This stream is representative of the mix of the various producer streams flowing down the TAPS and making up the crude in Tank 150. Alyeska proposes to sample this crude stream periodically as part of the compliance monitoring for the ORL. The Department believes a tiered approach is necessary to ensure that a representative average of the crude oil is collected and to track trends and changes in the crude oil constituents.

On October 31, 2002 Alyeska collected a sample near Pump Station 1 using their existing crude oil sampling methodology. The sample was analyzed by Core Laboratories using four analyses:

- Liquid phase component speciation, including C_1 – C_{10} hydrocarbons, and nine individual HAP's, using ASTM Method 5134 Modified;
- Vapor phase hydrogen sulfide (H_2S) content, via ASTM D-5705;
- Molecular weight, using Freezing Point Depression; and
- Reid Vapor Pressure, via ASTM D-5191.

The liquid phase component speciation and crude molecular weight are used to determine the crude vapor composition. The H2S content and the Reid Vapor Pressure are not utilized to determine HAP emissions.

Alyeska used the methodology described in AP-42, Section 7.1.4 to determine the HAP content of the crude vapors.

2. Breakout Tank Emissions. Along with the amount of crude entering the breakout tank, the weight fraction of HAPs in the crude vapor is the key information needed to calculate breakout tank HAP emissions. Alyeska used the TANKS 4.0 model and the speciation methodology described in AP-42, Section 7.1.4 to determine the HAP content of the crude vapors. Appendices B and E of the application describe the methodology in detail.

3. Combustion Equipment Emissions. Heater and turbine HAP emissions were determined using the emission factors in AP-42. Diesel engine and incinerator HAP emissions were determined using AP-42 emission factors and actual or allowable operation. Please refer to Alyeska's application, Appendices C and D for further details.

4. **Fugitives Emissions.** Fugitive HAP emissions have been estimated in a two part process. First, total organic compound (TOC) emissions from piping leaks were determined based on a widely used methodology documented in the USEPA's Protocol for Equipment Leak Emission Estimates. This document provides fugitive TOC emission factors for equipment in both liquid and gas service that were developed through extensive studies. In 1998, Alyeska conducted a fugitive emissions analysis using these factors and facility-specific parameters (piping type and count) determined through an on-site study of three representative pump stations. The PS5 TOC emissions determined in the 1998 study were then speciated into HAP emissions using the Core crude composition data. Please refer to Alyeska's application, Page 7 of Appendices C and D for further details.

5. **Fuel Storage Tanks.** Under the terms and conditions of Construction Permit No. 098CP02, PS 5 total potential liquid fuel consumption is approximately 5,000,000 gallons per year. Based on this maximum annual throughput, and conservatively assuming that the fuel is kerosene rather diesel, the USEPA's computer model TANKS 4.0 indicates that TOC emissions are approximately 75 pounds per year. Because the HAP content of diesel fuel can be expected to be less than 2 percent, this source category has no meaningful contribution to facility actual or potential HAP emissions.

Appendix B
Emissions Calculations--- Alyeska Pump Station 5

Equations for calculating the Hazardous Air Pollutant (HAP) for combustion equipment at Pump Station 5 is laid out below. These equations are used to calculate each individual HAP. These equations were used to develop tables of potential and actual emissions. Equations and methodologies used to calculate HAP emissions from the breakout tank and piping are documented in Alyeska's October 14, 2003 permit application.

Potential Emissions Calculations

Diesel-Fired Turbines

$$\mathrm{HAP}\left(\frac{tons}{yr}\right) = Emission\_Factor\left(\frac{lb}{MMBtu}\right) * Heat\_Input\left(\frac{MMBtu}{yr}\right) * \left(\frac{ton}{2000lbs}\right)$$

$$\mathrm{HAP}\left(\frac{tons}{yr}\right) = Emission\_Factor\left(\frac{lb}{MMBtu}\right) * 534{,}971\left(\frac{MMBtu}{yr}\right) * \left(\frac{ton}{2000lbs}\right)$$

$$\mathrm{HAP}\left(\frac{tons}{yr}\right) = Emission\_Factor\left(\frac{lb}{MMBtu}\right) * 267.486\left(\frac{MMBtu * ton}{yr * lbs}\right)$$

Diesel-Fired Heaters

$$\mathrm{HAP}\left(\frac{tons}{yr}\right) = Emission\_Factor\left(\frac{lb}{MMBtu}\right) * Heat\_Input\left(\frac{MMBtu}{yr}\right) * \left(\frac{ton}{2000lbs}\right)$$

$$\mathrm{HAP}\left(\frac{tons}{yr}\right) =$$

$$Emission\_Factor\left(\frac{lb}{MMBtu}\right) * 137{,}000\left(\frac{Btu}{gal}\right) * 2{,}941{,}314\left(\frac{gal}{yr}\right) * \left(\frac{ton}{2000lbs}\right) * \frac{1}{1{,}000{,}000}$$

$$\mathrm{HAP}\left(\frac{tons}{yr}\right) = Emission\_Factor\left(\frac{lb}{MMBtu}\right) * 201.48\left(\frac{MMBtu * ton}{yr * lbs}\right)$$

Diesel Engines

$$\text{HAP}\left(\frac{tons}{yr}\right) =$$

$$Emission\_Factor\left(\frac{lb}{MMBtu}\right) * Total\_Engine\_Heat\_Rate\left(\frac{Btu}{hp-hr}\right) * Engine\_Output(hp) *$$

$$Engine\_Annual\_Useage\left(\frac{hr}{yr}\right) * \left(\frac{ton}{2000lbs}\right)$$

$$\text{HAP}\left(\frac{tons}{yr}\right) =$$

$$Emission\_Factor\left(\frac{lb}{MMBtu}\right) * \left(\frac{7{,}000Btu}{hp-hr}\right) * (170hp) * \left(\frac{8760hr}{yr}\right) * \left(\frac{ton}{2000lbs}\right)$$

$$\text{HAP}\left(\frac{tons}{yr}\right) = Emission\_Factor\left(\frac{lb}{Btu}\right) * \frac{1}{1{,}000{,}000} * 5{,}212{,}000\left(\frac{Btu * hp * hr * ton}{hp-hr * yr * lbs}\right)$$

Incinerators

$$\text{HAP}\left(\frac{tons}{yr}\right) = Emission\_Factor\left(\frac{lb}{ton}\right) * Max\_Waste\_Combusted\left(\frac{ton}{yr}\right) * \left(\frac{ton}{2000lbs}\right)$$

$$\text{HAP}\left(\frac{tons}{yr}\right) = Emission\_Factor\left(\frac{lb}{ton}\right) * 1{,}314\left(\frac{ton}{yr}\right) * \left(\frac{ton}{2000lbs}\right)$$

$$\text{HAP}\left(\frac{tons}{yr}\right) = Emission\_Factor\left(\frac{lb}{ton}\right) * 0.657\left(\frac{ton * ton}{yr * lbs}\right)$$

Actual Emissions Calculations

Diesel-Fired Turbines

$$\text{HAP}\left(\frac{tons}{yr}\right) = Emission\_Factor\left(\frac{lb}{MMBtu}\right) * Heat\_Input\left(\frac{MMBtu}{yr}\right) * \left(\frac{ton}{2000lbs}\right)$$

$$\text{HAP}\left(\frac{tons}{yr}\right) = Emission\_Factor\left(\frac{lb}{MMBtu}\right) * 72{,}704\left(\frac{MMBtu}{yr}\right) * \left(\frac{ton}{2000lbs}\right)$$

$$\text{HAP}\left(\frac{tons}{yr}\right) = Emission\_Factor\left(\frac{lb}{MMBtu}\right) * 36.352\left(\frac{MMBtu * ton}{yr * lbs}\right)$$

Diesel-Fired Heaters

$$\text{HAP}\left(\frac{tons}{yr}\right) = Emission\_Factor\left(\frac{lb}{MMBtu}\right) * Heat\_Input\left(\frac{MMBtu}{yr}\right) * \left(\frac{ton}{2000lbs}\right)$$

$$\text{HAP}\left(\frac{tons}{yr}\right) = Emission\_Factor\left(\frac{lb}{MMBtu}\right) * 28{,}814\left(\frac{MMBtu}{yr}\right) * \left(\frac{ton}{2000lbs}\right)$$

$$\text{HAP}\left(\frac{tons}{yr}\right) = Emission\_Factor\left(\frac{lb}{MMBtu}\right) * 14.402\left(\frac{MMBtu * ton}{yr * lbs}\right)$$

Diesel Engines

$$\mathrm{HAP}\left(\frac{tons}{yr}\right)=$$
$$Emission\_Factor\left(\frac{lb}{MMBtu}\right)*Total\_Engine\_Heat\_Rate\left(\frac{Btu}{hp-hr}\right)*Engine\_Output(hp)*$$
$$Engine\_Annual\_Useage\left(\frac{hr}{yr}\right)*\left(\frac{ton}{2000lbs}\right)$$

$$\mathrm{HAP}\left(\frac{tons}{yr}\right)= Emission\_Factor\left(\frac{lb}{MMBtu}\right)*\left(\frac{7.0MMBtu}{yr}\right)*\left(\frac{ton}{2000lbs}\right)$$

$$\mathrm{HAP}\left(\frac{tons}{yr}\right)= Emission\_Factor\left(\frac{lb}{MMBtu}\right)*0.0035\left(\frac{MMBtu*ton}{yr*lbs}\right)$$

Incinerators

$$\mathrm{HAP}\left(\frac{tons}{yr}\right)= Emission\_Factor\left(\frac{lb}{ton}\right)*Max\_Waste\_Combusted\left(\frac{ton}{yr}\right)*\left(\frac{ton}{2000lbs}\right)$$

$$\mathrm{HAP}\left(\frac{tons}{yr}\right)= Emission\_Factor\left(\frac{lb}{ton}\right)*84\left(\frac{ton}{yr}\right)*\left(\frac{ton}{2000lbs}\right)$$

$$\mathrm{HAP}\left(\frac{tons}{yr}\right)= Emission\_Factor\left(\frac{lb}{ton}\right)*0.042\left(\frac{ton*ton}{yr*lbs}\right)$$